

Appl No.:10/643,063

Atty. Dkt.: UCF-372

**Amendments to the Specification:**

Please add the following four paragraphs on page 7, line 2:

Fig. 10 is a front view of the TFT-LCD structure shown in Fig. 2.

Fig. 11 is a front view of the TFT-LCD structure shown in Fig. 5.

Fig. 12 is a front view of the TFT-LCD structure shown in Fig. 7.

Fig. 13 is a front view of the TFT-LCD structure shown in Fig. 9.

Please amend the paragraph on page on page 8 starting at line 3 and ending at line 14 as follows:

Figure 2 shows cross sectional view of a novel design of the TFT-LCD structure of the present invention and Figure 10 shows a front view of the structure shown in figure 2. A major novel feature of this design is that instead of just having one common electrode, there are two common electrodes **21, 23**, one of a lower voltage, e.g. 0V and one of a higher voltage, e.g. 5V. ~~The~~ In Fig. 3, the first common electrode layer **21** in the top substrate **22** has a constant high voltage of 5V whereas the second common electrode layer **23** in the bottom substrate **24** has a lower voltage of 0V. Common electrode **23** is separated from the pixel electrode **25** by a passivation layer **26**, which is an electrical insulation layer. When a low voltage of 0V is applied to pixel electrode **25**, a uniform vertical field **30** is generated as shown in Figure 3. This uniform vertical field generated when the pixel voltage is 0V usually leads to a dark state and has very fast switching since it is electric-field driven. This is similar to the fast switching produced by the vertical field generated in the conventional TFT-LCD devices.

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Please amend the paragraph starting on page 9 at line 12 and ending on page 10 at line 2 as follows:

In Figure 2, common electrode 21 has higher voltage; whereas, common electrode 23 has lower voltage and in principle these two electrodes can be interchanged. This interchange is shown in Figure 5 which is a cross section view of the TFT-LCD structure and Fig. 11 which shows a front view of the structure shown in Figure 5. In Figure 5, the first common electrode 51 on top substrate 52 has a lower voltage (0V); whereas the second common electrode layer 53 in the bottom substrate 54 has a high voltage (5V). This alternative design may lead to a less uniform vertical field because of the slightly higher potential difference that is caused by a passivation layer 56. In Figure 5, a high electric field is emitted from pixel electrode 55 and hence a higher electric field is established across the passivation layer 56 than when the electric field is emitted from the top electrode 51. It should be noted, that the terminology "passivation layer" in the description of the present invention, is commonly known as an insulation layer. However, the potential difference that is established between pixel electrode 55 and second common electrode layer 53 can principle be reduced by altering the voltage to second common electrode 53 or voltage to the pixel electrode 55 in order to compensate for the voltage drop.

Please amend the paragraph starting on page on page 10 at line 14 and ending on page 11 at line 3 as follows:

In Figure 9 is a cross sectional view showing that, the fringing field leads to the

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formation of multi-domains which are symmetrical about the mid-plane of the gap 90, 91 between the second common electrode layer 92. Figure 13 is a front view of the of the structure shown in Figure 9. This multi-domain formation will lead to wide viewing angle in two directions, left-right or up-down. It can lead to wide-viewing-angle in all four directions by adopting a zig-zig electrode structure known as the Multi-domain Vertical Alignment (MVA). Figure 9 shows the natural formation of multi-domains due to the symmetrical fringing pattern when the first common electrode layer 93 in the top substrate 94 has 5V and the second discontinuous common electrode layer 92 in the bottom substrate 95 has 0V and the voltage in the pixel electrode 96 is 5V. Figure 9 is the same configuration as Figure 4, with the added illustration of how the fringing field allows different poses for the LC molecule resulting in a naturally wide viewing angle.